

ABSTRACT

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An apparatus is provided that includes one or more optical fibers or other waveguides for receiving light, and one or more modeled tap structures formed in the one or more optical fibers or waveguides configured so that, when the light travels through the one or more optical fibers or waveguides, a desired illumination pattern is created by scattering, reflection and/or refraction of portions of the light through the one or more modeled tap structures formed by using illumination pattern parameters determined by modeling the desired illumination pattern. The illumination pattern can be spherical, cylindrical or conical in shape. The illumination pattern can also be in the shape of an arc. The apparatus can be utilized with one or more light sources. Further, a method is provided of determining illumination patterns resulting from light passing through one or more tap structures on one or more optical fibers or waveguides.